

REMARKS

Applicants have amended Table 1, as noted in the Office Action and have submitted an Abstract of Disclosure on a separate page.

Applicants have amended Claims 6, 8-10 and have added new Claims 11 and 12. Support for the amendments can be found generally throughout the Specification, specifically at page 4, lines 15-29. Applicants respectfully submit that it is for the inventor to decide what bounds of protection he will seek and he has the right to retreat to otherwise patentable subject matter because only part of what was originally claimed is patentable. In re Johnson, 194 USPQ 187, 195-96 (CCPA 1977). Applicants respectfully submit that no new matter has been added by the present amendment.

I. Rejection under 35 U.S.C. §102(b)

Claims 6-9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Witte, et al. (GB 1,575,115). Applicants respectfully traverse this ground of rejection. Applicants submit that in order to anticipate an invention, the cited prior art reference must teach each and every element of the claimed invention, either expressly or inherently.

The amended pending claims are directed to a rubber mixture comprising one or more rubbers with 0.1 to 2 wt.% of bonded carboxyl groups or their salts and a glass transition temperature in the range from -120° to -50°C and one or more fillers in the range 10 to 500 parts by wt., with respect to 100 parts by wt. of rubber, wherein the rubber mixture is prepared by reacting one or more rubbers with carboxylmercaptans of the general formula (I) HS-R¹-COOX, wherein R¹ represents a linear, branched or cyclic C₂-C₃₆ alkylene group, which may optionally be substituted with up to 3 further carboxyl groups, or which may be interrupted by nitrogen, oxygen or sulfur atoms, or a C₆-C₁₂-arylene group and X represents hydrogen or a metal or ammonium ion, optionally in the presence of radical starters.

Witte, et al. discloses a process to produce polar-modified uncross-linked polybutadiene with good processing properties and a sufficiently low glass transition temperature. According to Witte, et al. the process for the production of mercaptan-modified polybutadiene with a 1,2-double bond content of from 30 to 60%, wherein

the polybutadiene is reacted in solution with mercaptans corresponding to the general formula $\text{HS}-(\text{CH}_2)_{n1}-\text{CR}_1\text{R}_2\text{OH}$ or $\text{HS}-(\text{CH}_2)_{n2}-\text{COOR}_3$. Witte, et al. discloses that R_1 , R_2 and R_3 represent hydrogen or an alkyl or aryl radical, i.e. $\text{C}_n\text{H}_{2n+1}$. The only numeric reference in Witte, et al. to a glass transition temperature appears in Example 1 and is -42°C.

Applicants submit that Witte, et al. does not teach or suggest a rubber mixture having a glass transition temperature in the range from -120° to -50°C. Further, Applicants submit that Witte, et al. does not teach or suggest reacting one or more rubbers with carboxylmercaptans of the general formula (I) $\text{HS}-\text{R}^1-\text{COOX}$, wherein R^1 represents a linear, branched or cyclic C_2-C_{36} alkylene group, which may optionally be substituted with up to 3 further carboxyl groups, or which may be interrupted by nitrogen, oxygen or sulfur atoms, or a C_6-C_{12} -arylene group and X represents hydrogen or a metal or ammonium ion. Therefore, Applicants submit that Witte, et al. does not teach or suggest each and every element of the claimed invention and accordingly, Applicants request withdrawal of this ground of rejection.

II. Rejection under 35 U.S.C. § 103(a)

Claims 6-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Witte, et al. in view of Oshima, et al. (U.S. Patent No. 5,250,630). Applicants respectfully traverse this ground of rejection. Applicants respectfully submit that “in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claims limitations. The teachings or suggestions to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants’ disclosure.” See MPEP § 2142, citing In re Vaeck, 947 F.2d 488, 20 USPQ 2d. 1438 (Fed. Cir. 1991). Applicants also respectfully submit that which is inherent in the prior art, if not known at the time of the invention, cannot form a proper basis for rejecting the claimed invention as obvious under § 103. See In re Shetty, 566 F.2d 81, 86, 195 U.S.P.Q. 753, 756-57 (C.C.P.A. 1977).

Applicants respectfully submit that the Office Action fails to establish a prima facie case of obviousness. As discussed above, Witte, et al. does not teach or suggest each and every element of the claimed invention. Applicants submit that the deficiencies of Witte, et al. are not overcome by combination with Oshima, et al.

Oshima, et al. discloses a heat resistance pneumatic tire whose tread is composed of a rubber composition comprising a modified conjugated diene based polymer prepared by adding an α, β -unsaturated carboxylic acid of the general formula $R_1R_2C=C(R_3)COOH$, wherein R_1, R_2, R_3 represents hydrogen, halogen, alkyl, alkenyl or allyl group at the most having 5 carbon atoms. Oshima, et al. does not teach or suggest a rubber mixture having a glass transition temperature in the range from -120° to $-50^\circ C$. Further, Applicants submit that Witte, et al. does not teach or suggest reacting one or more rubbers with carboxylmercaptans of the general formula (I) $HS-R^1-COOX$, wherein R^1 represents a linear, branched or cyclic C_2-C_{36} alkylene group, which may optionally be substituted with up to 3 further carboxyl groups, or which may be interrupted by nitrogen, oxygen or sulfur atoms, or a C_6-C_{12} -arylene group and X represents hydrogen or a metal or ammonium ion. Therefore, Applicants submit that Witte, et al. in view of Oshima, et al. does not teach or suggest each and every element of the claimed invention and accordingly, Applicants request withdrawal of this ground of rejection.

III. Rejection of under 35 U.S.C. § 103(a)

Claims 6-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Brown (U.S. Patent No. 2,662,874) in view of Kitahara, et al. (U.S. Patent No. 4,412,031). Applicants respectfully traverse this ground of rejection and herein incorporate their comments above.

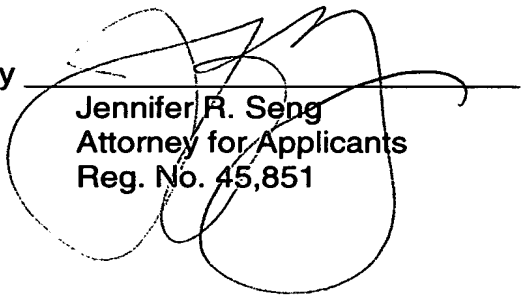
Brown discloses plastic synthetic rubbers. According to Brown, a plastic, rubbery polymer of an open-chain aliphatic conjugated diene is reacted with a carboxylating agent or carboxyl-supplying reagent, preferably in the presence of an oxidation agent. According to the Office Action, Brown does not disclose solution polymerized rubber and the formation of a tire comprising filler. Applicants also respectfully submit that Brown does not teach or suggest a rubber mixture having a glass transition temperature in the range from -120° to $-50^\circ C$.

Applicants submit there is no motivation present in either reference to produce a rubber mixture as claimed via solution polymerization. Brown discloses a plastic modified rubber and Kitahara, et al. discloses modified rubber compositions employing a compound containing a carboxyl and an aldehyde group. According to Kitahara, et al. after the rubber is polymerized an organic compound having a carboxyl group and an aldehyde group and an acid catalyst are utilized to modify the rubber. There is no suggestion to solution polymerize a rubber and then react the mixture with a carboxylmercaptans as claimed.

Further, Applicants submit, even if one skilled in the art would have been motivated to pick and choose different steps and compositions of the cited references, one skilled in the art would still not arrive at the claimed invention because neither reference teaches producing a rubber mixture having a glass transition temperature as claimed. As submitted above, Applicants respectfully remind the Examiner that which is inherent in the prior art, if not known at the time of the invention, cannot form a proper basis for rejecting the claimed invention as obvious under § 103. *See In re Shetty*, 566 F.2d 81, 86, 195 U.S.P.Q. 753, 756-57 (C.C.P.A. 1977). Therefore, for at least these reasons, Applicants request withdrawal of this ground of rejection as the Office Action has not established a prima facie case of obviousness.

Respectfully submitted,

By



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